

Claims

What is claimed is:

1. A composition of matter comprising UV curable materials incorporating nanotechnology for the coating of fiberglass

1. A one-part, substantially solvent-free coating composition for applying to a substrate, consisting essentially of:

from about 60 to 80% by weight, based on total composition weight, of a polymerizable compound which comprises a mixture of acrylates, the acrylate mixture comprising an aliphatic urethane acrylate and a mixture of acrylate monomers, from 10 to 30% silicon dioxide monospheres of a diameter of approximately 20 nanometers, and from about 1 to 10% of an organic photoinitiator which initiates a polymerization reaction in the composition when it is exposed to ultraviolet light, without the use of added heat for either evaporation or postcure.

2. The composition of claim 1, where the mixture of acrylate monomers is selected from a group consisting of isobornyl acrylate, tetrahydrofurfuryl acrylate, propoxylated glycerol triacrylate, 1,6-hexandiol diacrylate, dipropylene glycol diacrylate, tripropylene glycol diacrylate, neopentyl glycol propoxylate diacrylate, trimethylopropane triacrylate, trimethylopropane ethoxylate triacrylate, pentaerythritol alkoxylate tetraacrylate, and dimethylopropane tetraacrylate.

3. The composition of claim 1, where the photoinitiator is selected from a group comprising 1-hydroxycyclohexyl phenyl ketone,
2-hydroxy-2-methyl-1-phenyl-propan-1-one, and mixtures thereof.
4. The composition of claim 1, further comprising 0.01 - 2.0% of a surfactant or mixture of surfactants.
5. The composition of claim 1, where the aliphatic urethane may be mono, di, tri, or tetrafunctional.